

## **ABB Modbus RTU driver for JMobile**

This document contains the information needed to connect the HMI to ABB controllers using the Modbus RTU standard protocol over a serial communication link.



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## ABB Modbus RTU Driver

The operator panels can be connected to a Modbus network as the network master using this generic driver.

This specific implementation of the Modbus RTU driver provides easy handling of the connections to the ABB controllers providing specific support for PLC models and tag import facilities.

### Protocol Editor Settings

Add (+) a driver in the Protocol editor and select the protocol called “ABB Modbus RTU” from the list of available protocols.

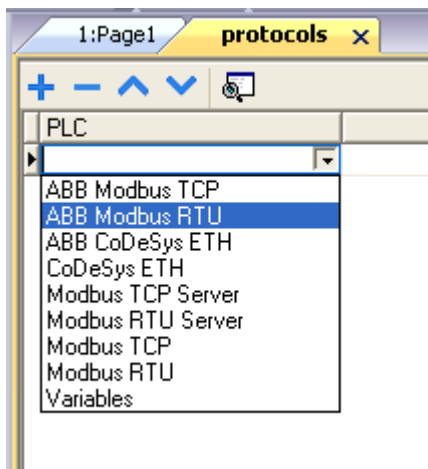


Figure 1

The driver configuration dialog is shown in the following figure.

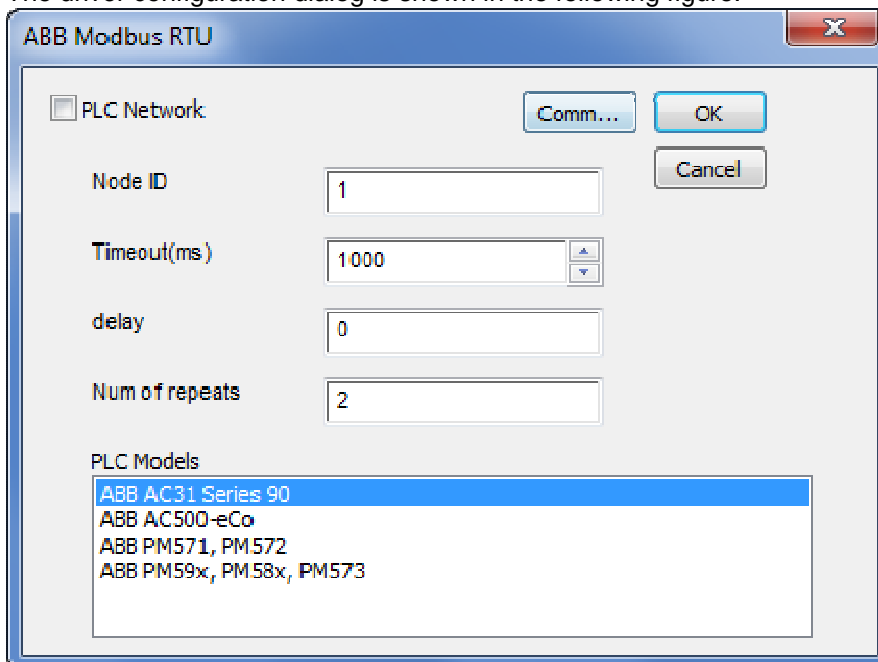


Figure 2

<b>Node ID</b>	Modbus node of the slave device
<b>Timeout (ms)</b>	Defines the time inserted by the protocol between two retries of the same message in case of missing response from the server device. It is expressed in milliseconds.
<b>Delay (ms)</b>	This parameter defines a fixed time delay in the communication between the end of the last received frame and the starting of a new request; when set to 0, the new request will be issued as soon as the internal system is able to reschedule it.
<b>Num of repeats</b>	This parameter defines the number of times a certain message will be sent to the controller before reporting the communication error status. A value of 1 for the parameter "No of repeats" means that the panel will eventually report the communication error status if the response to the first request packet is not correct.
<b>PLC Models</b>	The list allows to select the PLC model you are going to connect to. The selection will influence the data range offset per each data type according to the specific PLC memory resources.
<b>PLC Network</b>	The protocol allows the connection of multiple controllers to one operator panel. To set-up multiple connections, check "PLC network" checkbox and enter the node ID per each slave you need to access.

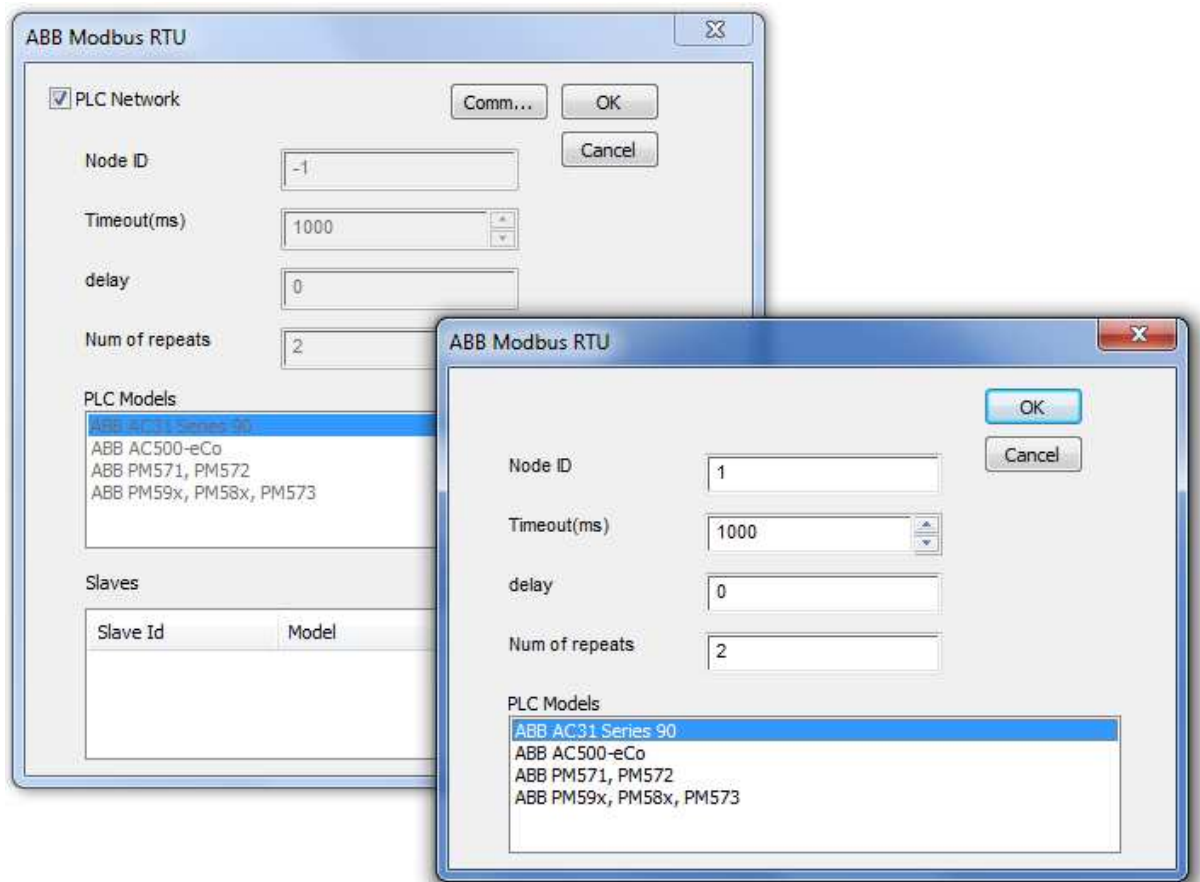


Figure 3

The "Comm..." button displays the communication parameters setup dialog.

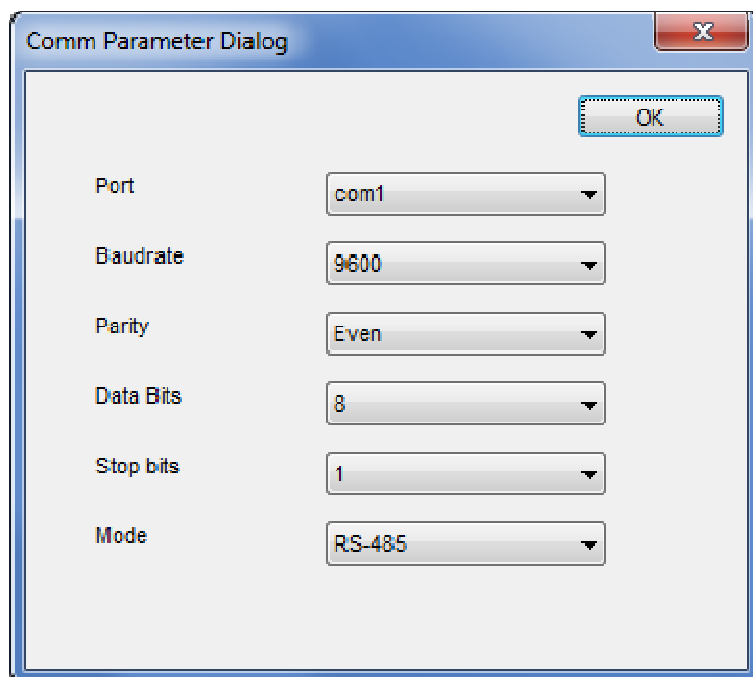


Figure 4

<b>Port</b>	Serial port selection. COM1 is the panel PLC port, COM2 is the PC/Printer port
<b>Baudrate, Parity, Data bits, Stop bits</b>	Communication parameters for the serial line
<b>Mode</b>	Serial port mode; can be selected between: RS-232, RS-485 (2 wires) RS-422 (4 wires)

## Tag Import

This special Modbus driver supports tag import.

The ABB controllers are programmable with a programming tool called ControlBuilder which is based on the CoDeSys V2.3 soft PLC.

The tag importer supports the CoDeSys export file in ".exp" format.

In the CoDeSys programming software the Export command is available under the Project menu as shown in the following figure.

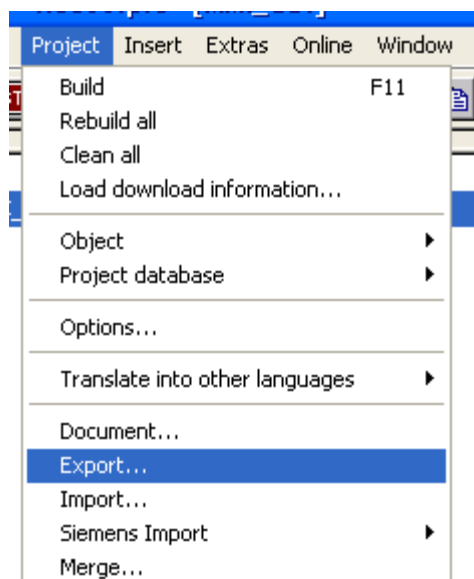


Figure 5

In the tag editor select the driver and click on the "Import tag" button to start the importer.

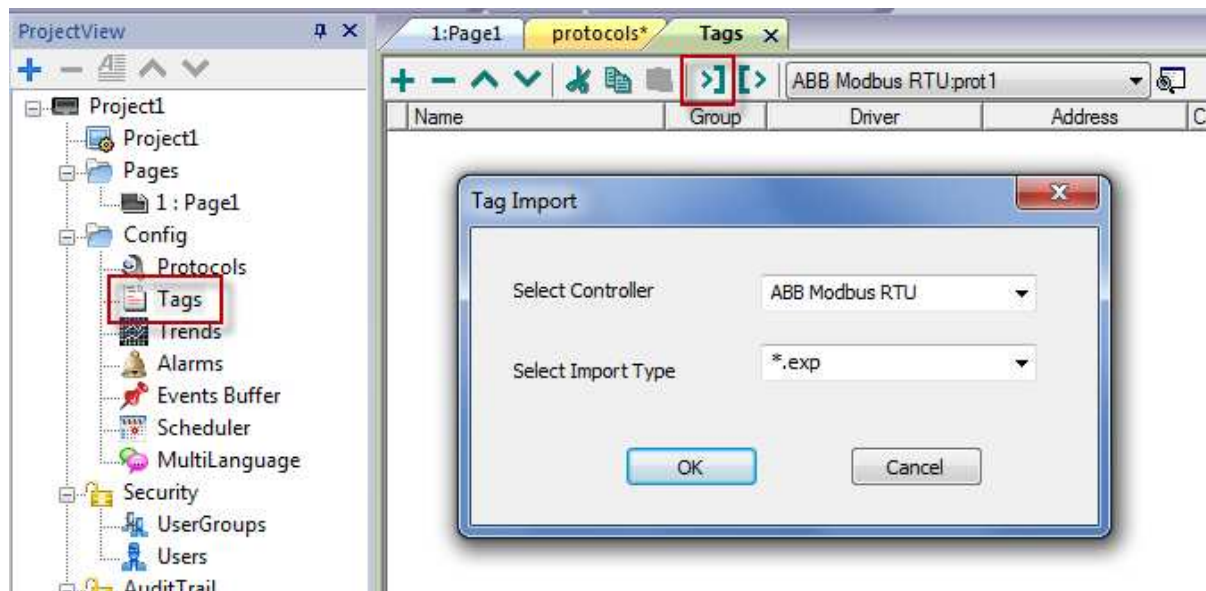


Figure 6

Locate the ".exp" file and confirm.

The tags present in the exported document are listed in the tag dictionary from where they can be directly added to the project using the add tags button as shown in the following figure.

logname	memorytype	arrayindex.subin...	index	datatype	array	arraysize
str	MW0	8	0	string-16	true	16
ARRAY_WORD[1]	MW0	0	0	unsignedShort	false	0
ARRAY_WORD[2]	MW0	1	0	unsignedShort	false	0
ARRAY_WORD[3]	MW0	2	0	unsignedShort	false	0
ARRAY_WORD[4]	MW0	3	0	unsignedShort	false	0
MDW2	MDO	2	0	unsignedInt	false	0
MDW3	MDO	3	0	unsignedInt	false	0

Figure 7

### Communication Status

The current communication status can be displayed using the dedicated system variables. Please refer to the chapter “system variables” about available types and their use.

The codes supported for this communication driver are:

Error	Notes
NAK	Returned in case the controller replies with a not acknowledge
Timeout	Returned when a request is not replied within the specified timeout period; ensure the controller is connected and properly configured to get network access
Line Error	Returned when an error on the communication parameter setup is detected (parity, baud rate, data bits, stop bits); ensure the communication parameter settings of the controller is compatible with panel communication setup
Invalid response	The panel did receive from the controller a response, but its format or its contents is not as expected; ensure the data programmed in the project are consistent with the controller resources
General Error	Error cannot be identified; should never be reported; contact technical support

### Implementation details

This Modbus RTU implementation supports only a subset of the standard Modbus Function Codes. The supported Function Codes are listed in the table below.

Code	Function	Description
01	Read Coil Status	Reads multiple bits
02	Read Input Status	Read the ON/OFF status of the discrete inputs (1x reference) in the slave
03	Read Holding Registers	Read multiple Registers
04	Read Input Registers	Reads the binary contents of input registers (3x reference) in the slave
05	Force Single Coil	Forces a single Coil to either ON or OFF
06	Preset Single Register	Presets a value in a Register
16	Preset Multiple Registers	Presets value in multiple Registers

Communication speed with controllers is supported up to 57600 baud. Floating point data format is compliant to the IEEE standard.